

# CAZy - Carbohydrate-Active enZYmes

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**Family GH48**

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**CAZy Family** Glycoside Hydrolase Family 48  
**Known Activities** endoglucanase (EC 3.2.1.4); cellobiohydrolase (EC 3.2.1.91).  
**Mechanism** Inverting  
**Catalytic Nucleophile/Base** Not known  
**Catalytic Proton Donor** Glu  
**3D Structure Status** Available (see PDB). Fold ( $\alpha/\alpha$ )<sub>6</sub>  
**Clan** GH-M  
**Note** formerly known as cellulase family L.  
**Relevant Links** HOMSTRAD; InterPro; PFAM; PRINTS  
**Statistics** CAZy(21); GenBank/GenPept (30); Swissprot (14); PDB (10); 3D(2)

Protein	Organism	EC#	GenBank / GenPept	SwissProt	PDB / 3D
cellulase CelA	<i>Anaerocellum thermophilum</i>	3.2.1.91 3.2.1.4	Z86105 <b>CAB06786.1</b>	P96311	
BLi01881 or BL01231	<i>Bacillus licheniformis</i> DSM 13 ATCC 14580	n.d.	CP000002 AAU23416.1 AE017333 <b>AAU40776.1</b>		
CelC (fragment)	<i>Bacillus licheniformis</i> MD1	n.d.	AJ786638 <b>CAH10343.1</b>		
processive glycoside hydrolase Cel48A	<i>Cel48A Bacteroides cellulosolvens</i>	n.d.	AY374129 <b>AAR23324.1</b>		
CelA	<i>Caldicellulosiruptor saccharolyticus</i>	3.2.1.4	M36063 AAA72860.1 L32742 <b>AAA91086.1</b>	P22534	
cellobiohydrolase B	<i>Cel48A Cellulomonas fimi</i>	3.2.1.91	L29042 AAA50257.1 L38827 <b>AAB00822.1</b>	P50899	
CelF (CAC0911)	<i>Clostridium acetobutylicum</i> ATCC 824	n.d.	AE007607 <b>AAK78887.1</b> NC_003030 NP_347547.1	Q97KK7	
CelF	<i>Cel48A Clostridium cellulolyticum</i>	3.2.1.4 3.2.1.91	M87018 AAA73866.1 U30321 <b>AAB41452.1</b>	P37698	1F9D A 1F9O A 1FAE A 1FBO A 1FBW A 1FCE _ 1G9G A 1G9J A
exoglucanase S (ExgS)	<i>Clostridium cellulovorans</i>	3.2.1.91	U34793 AAC38571.2	<b>O65986</b>	
CelD	<i>Clostridium josui</i>	n.d.	AB004845 <b>BAA32430.1</b>	O82831	
cellobiohydrolase Y (avicelase II) (CelY)	<i>Clostridium stercorarium</i>	3.2.1.91	Z69359 <b>CAA93280.1</b>	P50900	
CelS	<i>Cel48A Clostridium thermocellum</i>	n.d.	L06942 <b>AAA23226.1</b>	P38686	1L1Y D 1L2A E
1,4- $\beta$ -glucanase (CelY)	<i>Clostridium thermocellum</i> F7	n.d.	AJ863163 <b>CAI06105.1</b>		
cellulose 1,4- $\beta$ -	<i>Otiorynchus sulcatus</i>	3.2.1.91	AJ829763 <b>CAH25542.1</b>		

cellobiosidase (Cbh1)				AJ829764 CAH25543.1	
cellobiohydrolase Cel48C	<i>Cel48C</i>	<i>Paenibacillus barcinonensis</i>	3.2.1.91	AJ488933 CAD32945.1	Q8KKF7
cellulase Cel48A	<i>Cel48A</i>	<i>Piromyces equi</i>	n.d.	AF449413 AAN76735.1	Q8J1E2
cellulase Cel48A	<i>Cel48A</i>	<i>Piromyces</i> sp. E2	n.d.	AF449412 AAN76734.1	Q8J1E3
cellulase Cel48A	<i>Cel48A</i>	<i>Ruminococcus albus</i> 8	n.d.	AY422811 AAR01217.1	
SAV1855 (GuxA3)		<i>Streptomyces avermitilis</i> MA-4680	n.d.	AP005028 BAC69566.1 NC_003155 NP_823031.1	
SCO6546 or SC5C7.31c		<i>Streptomyces coelicolor</i> A3 (2)	n.d.	AL031515 CAA20643.1 NC_003888 NP_630627.1	O86728
exocellulase E6 (CelF; Tfu_1959)	<i>Cel48A</i>	<i>Thermobifida fusca</i> YX	3.2.1.91	AF144563 AAD39947.1 CP000088 AAZ55992.1	Q9XCD4

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